Transactions OF THE INSTITUTE OF BRITISH GEOGRAPHERS

Royal Geographical Society with IBG

The rice cities of the Khmer Rouge: an urban political ecology of rural mass violence

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Over the last 20 years, urban political ecology has made substantial contributions to the study of urban 'socionatures', part of the field's aim of applying political ecology to urban space. At the same time, urban political ecology has been limited by a perspective that tends to confine urbanisation to urban spatial forms; a conflation of process and site. The city is seen to be made by and for urban metabolism, disconnected from both rural and global socionatures. This paper offers a small, empirical corrective, based on a case study of Cambodian re-urbanisation under the Khmer Rouge. The Cambodian genocide began with the capture of the capital, Phnom Penh, by Khmer Rouge forces in April 1975. According to the standard narrative, the subsequent destruction of urban infrastructure and forced evacuation of residents is a historical case of 'urbicide' and reflects a broader interpretation of the Khmer Rouge as ideologically 'anti-urban'. Using documentary evidence, this paper reconstructs the functional role of Cambodia's network of cities under the Khmer Rouge. Contrary to the narrative, we find that cities were not destroyed. Rather, urban sociospatial practices, forms and rural–urban relations were reorganised to support the demands of rice production for foreign exchange and facilitate the administration of violence. This pragmatic reconstruction challenges claims of urbicide and contradicts the narrative of 'dead cities' and 'ghost towns'. Most importantly, it challenges urban political ecology's city-centrism: the processes that reanimated Cambodia's cities were the same ones that transformed rural space and motivated the evacuation of cities in the first place. Cambodian re-urbanisation accompanied re-ruralisation, a dialectic propelled by the transition to state capitalism. In this light, we encourage an urban political ecology that looks beyond the city's cadastral limits and engages those political ecologies within which the urban is situated.

Key words Cambodia; Khmer Rouge; political economy; urban political ecology; urbicide

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Revised manuscript received 27 March 2017

Introduction

Twenty years on from Erik Swyngedouw's (1996) appeal for a distinctly *urban* political ecology, the field has inspired considerable diversity in its subjects of study. As political ecology did for environmental change, scholars writing under the banner of urban political ecology have illuminated the socionatural substrata of those 'interwoven knots of social process, material metabolism, and spatial form' that make up urban space (Swyngedouw and Heynen 2003, 906–7). Urban political ecology now includes work on urban forests (Heynen 2003 2006), water (Arboleda 2015), hazards (Klinenberg 2015; Véron 2006), air pollution (Véron 2006), plastic bags (Njeru 2006), everyday practices (Loftus 2012), the diffusion of power (Lawhon *et al.* 2014), urban citizenship (Light 2003) and pests (Biehler 2013), among others.

This diversity hides an important self-limitation. From the emergence of urban political ecology, its proponents have insisted that cities are deeply integrated into non-urban geographies and situated within global processes operating at a variety of spatial and temporal scales (see Keil 2005). Indeed, one of urban political ecology's early objectives was to better understand the production of urban space as a manifestation of global networks of production and consumption. But with few exceptions, work in urban political ecology has confined itself to those processes, metabolisms and spatial forms taking place strictly within urban space, a limitation that Angelo and Wachsmuth (2015, 16) refer to as 'methodological cityism'. For such studies, the city comes to be made by and for the city – a tautology that fails to distinguish between city-as-site and urbanisation as process.

This paper offers a small corrective. Through documentary analysis, we reconstruct the roles played by Cambodia's cities between 1975 and 1979, a period that saw the ascendancy of the Communist Party of Kampuchea (CPK, also known as the Khmer Rouge)

The information, practices and views in this article are those of the author(s) and do not necessarily reflect the opinion of the Royal Geographical Society (with IBG). ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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and the reorganisation of the state economy toward rice production for export. The standard historical narrative presents the forced evacuation of the capital (Phnom Penh) and other cities in 1975 as a case of 'urbicide', the deliberate targeting and destruction of urban forms (see Tyner *et al.* 2014). Claims of urban obliteration stand in as evidence of the Khmer Rouge's anti-urban bias, part-and-parcel of a Communist ideology that sought to rid Cambodia of imperialist and capitalist influences. Contrary to the narrative, we find that Cambodia's cities were not destroyed, but repopulated and repurposed to support the administrative, logistical and security demands of increased rural rice production. These increases in production were essential to the CPK's economic vision for Cambodia: surplus rice was to be exported in exchange for agricultural and industrial inputs. As such, Cambodia's cities were not so much destroyed to promote *communism* as they were reorganised to support state *capitalism*. In this light, we argue that the standard narrative of Cambodia under the CPK has been weakened by an approach to historical interpretation that assumes rural–urban binaries and presupposes that processes of urbanisation are restricted to urban forms – indeed, the very same methodological cityism that has become *de rigueur* in urban political ecology.

This paper is organised into four sections. The first provides an overview of recent work in urban political ecology and summarises a critique of the field's methodological cityism. The second section describes the standard narrative of the CPK's rise to power and outlines the claims of urbicide associated with the forced evacuation of Cambodia's cities. The two final sections detail the simultaneous processes of re-ruralisation and re-urbanisation initiated by the CPK: the third section provides an overview of rice cultivation, while the last section examines the role of cities in supporting and expanding this mode of production for exchange. The paper concludes by encouraging work in urbicide, urban political ecology and urban geography more broadly that is sensitive to processes operating beyond the boundaries of the city – those rural and global political ecologies within which the city is situated.

Urban political ecology and methodological cityism

Emerging from political ecology, urban political ecology explores the socio-ecological interactions that coalesce around and within urban spaces. 'Cities are dense networks of interwoven sociospatial processes that are simultaneously local and global, human and physical, cultural and organic' (Swyngedouw and Heynen 2003, 899). Taking a broadly structural approach, work in urban political ecology emphasises the role of political economic processes in shaping the built environment, social practices of production and consumption, and entangled 'natural' processes. In his progress report on urban political ecology, Roger Keil (2005) identified five productive veins of research: urban metabolism; cyborg urbanism; infrastructures, scale and networks; neoliberalism; and water. Work in each of these areas shares a common interest in the human and non-human actors and processes that participate in the urban environment, the material forms and flows that connect to, interact within and emanate from cities, and the relations of power that mediate those forms and flows.

An early and enduring focus of urban political ecology concerns urban socionatures with a particular emphasis on 'the urban' as a historical moment in the expression of capitalism (Gabriel 2014). With its roots in political ecology, urban political ecology is broadly inspired by questions of power and justice, seeking new understandings for the ways that structural violence is manifest through urban practices and forms. In this vein, recent work in urban political ecology has placed a tremendous variety of objects under study, from the uneven provisioning of infrastructure and services (cf. Smith 2001) to the economic and racial mediation of access to urban green space (Heynen *et al.* 2006; Wolch *et al.* 2014). With a growing majority of the world's population now living in urban areas and cities becoming increasingly important variables in models of global sustainability, urban political ecology has a bright future.

But this diversity masks a nagging limitation. In *Urbanizing urban political ecology: a critique of methodological cityism*, Hillary Angelo and David Wachsmuth argue that – despite its seemingly far-reaching research programme – urban political ecology has unnecessarily confined itself to the city, remaining

> curiously quiet on the very feature of the contemporary urban world that should make [urban political ecology] so relevant: the dimensions of urbanisation processes that exceed the confines of the traditional city. (2015, 16)

This bias – or silence – is what Angelo and Wachsmuth refer to as 'methodological cityism': 'an analytical privileging, isolation and perhaps naturalisation of the city in studies of urban processes where the non-city may also be significant' (2015, 20).

At first glance, methodological cityism may not seem particularly problematic. After all, it should come as little surprise that an 'urban' political ecology would be primarily concerned with urban processes and forms. Indeed, the calls for a specifically urban political ecology responded to a growing critique of political ecology's historical focus on rural contexts. By this measure, urban political ecology was a deliberate attempt to extend nature into our understanding of

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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cities. But this was only one of its objectives. As Angelo and Wachsmuth note, one of the primary motivations of urban political ecology was the challenge of 'retheorizing urbanization itself as a process of socionatural and not only social transformation' (2015, 20). In this regard, urban political ecology was well-placed not only to inform urban studies, but to reimagine the larger matrix within which cities emerged: those rural and global socionatures to which cities are inextricably bound. This objective was driven by 'the realization that what we call "the urban" is a complex, *multiscale* and *multidimensional* process where the general and specific aspects of the human condition meet' (Keil 2005, 725; emphasis added). From this realisation, the scope of analysis under urban political ecology should be expanded to include the study of '"urban society" rather than the city per se' (Angelo and Wachsmuth 2015, 20). Such a reading of urban political ecology could have propelled the field into deeper theorisation around urbanisation and its embeddedness within distal and emergent global processes.

Instead, case studies in urban political ecology have developed a stubborn immunity to the non-urban. Urban political ecology has generally avoided those socionatures within which the urban is situated and through which the urban is produced: the flows of bodies and material to and from rural peripheries, the networks that direct these flows and the capital that inspires them, the legal geographies that mediate accretion and dispersion, and the global discourses that shape emergent cosmopolitan identities. As Angelo and Wachsmuth (2015, 21) note, methodological cityism does not deny that non-urban socionatures shape urban forms. But less scholarship has addressed how this transformation occurs and the larger matrix from which these processes emerge. Under methodological cityism, urbanisation (the process) is limited to those flows and metabolisms that operate in, under and through recognisable city forms (the site). Research finds the process by looking for the site, and finds the site by looking for the process: a *circulus in probando* that does little to forward theorisation.

To be sure, there are those that get outside the city limits. Pellow (2006) explores linkages between distal cities through networks that process high-tech waste. Robbins (2007) discusses the material and discursive practices of lawn care and its relationship with both urban and non-urban landscapes. And Keil and Young (2009) examine the 'in-between city' – a splintered urban form that has emerged to serve adjacent economic spaces. But these exceptions are rare. To the extent that urban political ecology has embraced a diversity of subjects and objects manifest within city-space, it has eschewed the opportunity to pursue broader questions of process: the wheres, whens and whys of urban change stimulated by the city's ties to the globe and countryside.

Urban political ecology for the Cambodian city

This paper follows existing work on urban infrastructures and networks: as an analysis of the role of cities within the larger economy of Democratic Kampuchea, our focus is on cities as linkages between spaces of rice production and consumption, and as nodes in networks of communication, transportation and security. However, this paper diverges from current scholarship in two ways. First, and with respect to urban metabolism, our approach is the mirror image of the literature. Scholarship in urban political ecology tends to see metabolism as the 'perpetual process of transformation of nature into city' (Kaika and Swyngedouw 2000, 120), a perspective that draws attention to the material flows that keep the city 'alive' (e.g. Wolman 1965). Here, we propose that the Cambodian city under the CPK functioned as a vital organ in the material flows keeping the *rural* alive. To understand the city under the CPK demands a more thorough comprehension of the space-time economy in which the 'urban' was situated; most notably, the political economy of rice production, a central feature of the CPK's Four Year Plan (Tyner and Rice 2016).

Second, much of the scholarship on urbicide has explored the impact of direct violence on urban residents: how the intricate and interwoven arrangements of processes and dependencies that support urban life can be used to manipulate urban dwellers for the sake of political gain (cf. Graham 2006; Hewitt 2009). Here again, we begin by inverting the subject of analysis. The CPK's transformation of Cambodia's cities was not accomplished to bring urban populations under political control. Rather, the intentional reorganisation of urban metabolism was critical to initiating and supporting a violent, predominantly rural, mode of production. Such an approach encourages broader questions about how the deliberate alteration of urban flows can be used to support large-scale programmes of non-urban violence – indeed, genocides.

To be sure, we are not proposing that rural processes should be privileged over urban ones, nor are we attempting to reify longstanding binaries of city and countryside. Rather, by temporarily inverting the analysis we hope to draw attention to the multiscalar context in which Cambodia's cities were re-urbanised – namely, a statewide programme of *re-ruralisation* motivated by a shift to state capitalism.

'Urbicide' and the Khmer Rouge

The chain of events that precipitated the deaths of up to two million Cambodians can be traced, in part, to a geographical expansion of the US war in Vietnam.

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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Between 1965 and 1973, the USA conducted aerial bombardment and covert military incursion into Cambodian territory to reduce the flow of arms and personnel from North to South Vietnam, deprive the Việt Cộng of safe havens and support broad objectives of communist 'containment' in Southeast Asia. The widespread destruction of farms and villages ravaged agricultural production: between 1970 and 1973, the area under rice cultivation decreased by 77 per cent and the total rice harvest decreased by 84 per cent (Nesbitt 1997). Millions of Cambodians fled rural areas for the cities, seeking refuge from US military action and an increasingly bloody civil war. By the time the Khmer Rouge captured Phnom Penh on 17 April 1975, the city's population had swelled from 1.5 million to 3 million with the influx of rural refugees (Kiernan 2002). Following the defeat of government forces loyal to Lon Nol, the CPK began the evacuation of the urban population from Phnom Penh and other cities. Men, women and children were relocated to rural cooperatives and work camps, often after days of travel on foot. Many died along the way. Doctors, nurses, teachers, engineers, leaders in the Lon Nol government, soldiers and Western-educated professionals were targeted for execution. The extraordinary violence inflicted by the CPK during the early days of the regime would be dwarfed by the death toll from disease, starvation and execution in the following months and years.

Historians have framed the evacuation and abandonment of urban areas in absolute, despairing terms. Phnom Penh after the putsch is described as 'a city with no people' (Dunlop 2005, 141). Brown explains that 'public buildings such as schools, colleges, and hospitals were emptied and left derelict. Libraries were scattered. Factories, houses, shops, and valuable infrastructure were abandoned' (2000, 26). Coates describes Phnom Penh as 'an extinguished city … A city abandoned. The Paris of the Orient, silenced and shamed' (2005, 43). These characterisations are part of the standard total view (STV), a totalising framework that attempts to explain the actions of the Khmer Rouge as a consequence of a despotic, autarkic, utopian and 'pure' communist ideology (Vickery 2000). Under the STV, the evacuation of urban areas is seen as a consequence of an ideologically derived anti-urban bias (Tyner *et al.* 2014), a belief that cities buttressed capitalist class relations and promoted forms of social heterogeneity that stood in the way of revolution. As such, some commentators have concluded that the CPK's actions constitute a case of 'urbicide' – the deliberate and systematic destruction of urban environments (Bishop and Clancey 2004). More than just collateral damage, urbicide suggests that cities are targeted for annihilation in and of themselves (Hewitt 2009). In addition to Cambodia, urbicide has been applied to events in Bosnia (Coward 2008), the Palestinian territories (Graham 2004) and the bombing of capital cities in the Second World War (Hewitt 2009).

In 'Urban metabolism as target: contemporary war as forced demodernization', Stephen Graham (2006) provides a functional description of urbicide at work during and after US military intervention in Iraq in 1991 and 2003. The increasing use of urban space as a site for state-sponsored warfare is what Graham calls 'forced demodernization' – the deliberate targeting, disruption or destruction of urban infrastructure 'as a strategy of political violence' (2006, 235). As a tactic of war, demodernisation attempts to damage adversary societies and cities by disrupting the 'multiple, networked infrastructures that together facilitate the continuous circulations and metabolisms necessary to sustain modern urban life' (2006, 235), including electricity, water, sanitation, medical facilities, police and fire, schools, communication and transportation networks. The deliberate targeting of infrastructure that supports civilian well-being has led some authors to observe that modern warfare is increasingly conducted against public health, not enemy combatants (see Blakeley 2003).

On the surface, many actions of the CPK resemble urbicide or forced demodernisation, in particular, the abandonment of hospitals, schools and factories, and the execution of doctors, teachers and other civic leaders (Clayton 1998). It is not obvious, however, that these actions were attempts to disrupt urban metabolism for the sake of weakening or destabilising the enemy: having achieved victory over Lon Nol's forces with the capture of Phnom Penh, the population of the city was already at the mercy of the revolutionaries. In fact, in the days leading up to the capture of Phnom Penh, Khmer Rouge units were in position to shell the city using captured artillery, but were specifically told to stand down so as to protect civilian lives.[1] The cases of urban destruction held up by the STV as examples of urbicide occurred *after* the capture of cities, not before.

Furthermore, to justify the evacuation of Phnom Penh, Khmer Rouge operatives told residents that the USA was planning to bomb the city (Seng 2005), an explanation that would have seemed wholly plausible given the extensive destruction already visited on the country by years of aerial bombardment. The influx of migrants escaping American bombs had already overwhelmed urban infrastructure and forced the poorest residents and refugees to the brink of starvation (see Kiernan 2002, 62). With rural rice production at a standstill and urban systems facing collapse, the CPK was able to use the palpable reality of a US-directed urbicide as motivation for moving people away from cities and back to the countryside.

A more complete argument against urbicide or forced demodernisation in the case of the Khmer

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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Rouge has been expressed elsewhere (see Tyner *et al.* 2014), but the primary points are as follows: (i) The Khmer Rouge did not destroy urban infrastructure so as to destroy people – after all, most of the urban population was evacuated into rural areas to provide labour for agriculture and infrastructural projects. (ii) The Khmer Rouge did not destroy infrastructure for the purpose of urban obliteration – in fact, factories, schools and hospitals were quickly repurposed. Notwithstanding the CPK's anti-urban rhetoric, if their *actions* did not correspond to urbicide or forced demodernisation, what exactly was the relationship between the CPK and Democratic Kampuchea's urban spaces? To answer this, we must examine how Cambodia's network of cities was crucial to the operation of the state and central to the CPK's plans.

In the sections that follow, we argue that the repurposing of urban space was necessary to achieve the CPK's objective of a state economy based on rice production. As centralised hubs for command and control, industrial manufacturing and the distribution of agricultural inputs and outputs, cities functioned as critical nodes in Democratic Kampuchea's space-time economy of production. The city was not a legacy of capitalism that had to be obliterated so that a pure, rural, communist state might rise (McIntyre 1996). Rather, it served a distinct practical purpose for a revolutionary regime attempting to consolidate political, economic and social control. Contrary to the standard narrative, the CPK's evacuation of Cambodia's cities does not represent an anti-urban, communist bias, but a deliberate attempt to reimagine and reorganise 'the urban' to support the demands of production under state capitalism.

The CPK's repurposing of urban space to support rural production is precisely the kind of observation that is hindered by methodological cityism. Though scholars of urbicide and the authors of the STV do not self-identify with urban political ecology, they share a similar analytical privileging of the urban. From the perspective of urbicide and forced demodernisation, cities are destroyed on the basis of being cities; ties to rural or geopolitical contexts are peripheral to the targeted infrastructure, demolished buildings and evacuated (or dead) city-dwellers that draw focus. In the case of Cambodia, the roots of urbicide, like urbanisation, extended well beyond Cambodia's major cities. For that reason, we start in the countryside with the driver of Cambodia's economic reorganisation: rice production.

Rice and the remaking of rural space

Cambodia's physical geography is dominated by a complex network of lakes and rivers that create diverse opportunities for cultivating rice – the region's primary agricultural product since the 9th century AD and the beginning of the Khmer empire. Entering from Laos and exiting into Vietnam, the Mekong River bisects the country into eastern and western parts. In the southern lowlands, the Mekong joins with the Tonle Sap River at the site of the capital, Phnom Penh. Two hundred kilometres to the northwest of Phnom Penh and occupying a vast, lacustrine floodplain is Tonle Sap Lake. This central floodplain is home to Cambodia's primary rice-growing region, where farmers take advantage of flat topography, fertile soils and seasonal rains. With extensive rice cultivation comes higher population densities: beyond Phnom Penh, Cambodia's next largest cities (Battambang, Siem Reap and Sisophan) are located in a ring around the lake. Figure 1 provides an overview of Cambodia's hydrology and the location of major cities.

After coming to power, the CPK sought to triple rice production over a four-year span: to 'seek, gather, save, and increase capital from agriculture, aiming to rapidly expand our agriculture, our industry, and our defense' (Party Center of the Communist Party of Kampuchea 1976c, 51). This ambitious plan was to be accomplished through three simultaneous endeavours: (i) expanding the total area under cultivation, (ii) increasing the yield per harvest of existing agricultural land and (iii) adding an additional harvest during the growing year wherever possible, but notably on all new agricultural lands (Party Center of the Communist Party of Kampuchea 1976a). The CPK sought to extend production through deforestation and large-scale irrigation schemes. In addition, an extensive network of dams and canals were constructed to bring water into historically dry regions and convert unproductive land to agriculture (Tyner and Will 2015). Improvements to irrigation were also intended to improve yields on existing fields by balancing rainfall variability and enable an additional harvest during the dry months when rain-fed fields were usually fallowed. Most notably, irrigation was essential for paddy rice, the highest yielding cultivation system and the one preferred by the CPK as a means to achieve their objective of tripling production.

Of all the historical forms of rice cultivation used in Southeast Asia, paddy rice (also called wet rice) requires the most extensive planning, coordination and control over land, material and labour (Bray 1994; Hanks 1992). Fields must be levelled and embankments built to hold water during the inundation phase of cultivation. Soil must be carefully prepared to establish a suitable pH and fields must be compacted – usually with the help of cattle or water buffalo – to ensure water retention. Rice seeds are often grown in dense seedbeds before being manually transplanted into primary growing fields. Water levels in the field must be carefully controlled as the crop matures, a period ranging from 90 to 150 days, during which time farmers

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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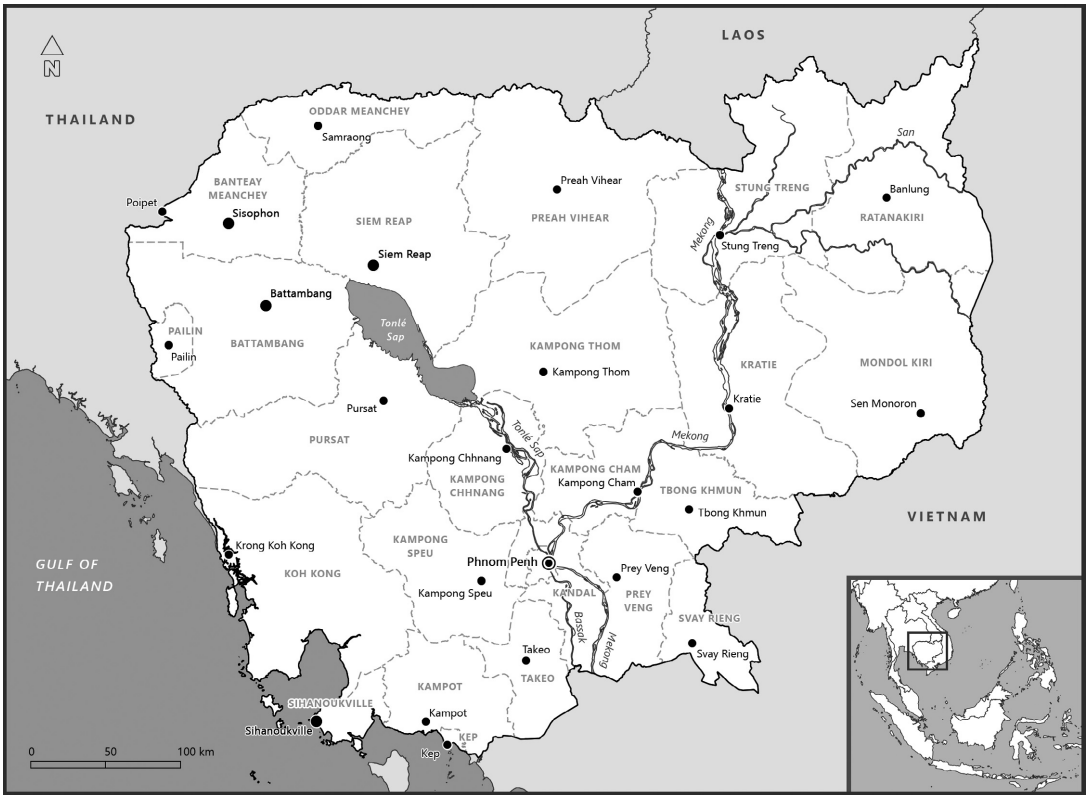

Figure 1 Major cities, provinces and rivers in Cambodia

work to deter birds and other pests. Once mature, rice is quickly harvested, threshed and winnowed to prevent loss from fungus. Labour and material requirements during a growing season do not remain constant, but peak during planting and harvesting. Traditionally, the anticipated availability of labour within the larger community was an important consideration in the timing of planting. Unlike other forms of cultivation, effective irrigation demands systematic coordination and infrastructural support beyond the household or village. While higher yields associated with paddy rice have historically supported higher population densities, higher population densities were necessary to meet the demands of paddy production (Hanks 1992).

Of course, not all of Cambodia's rice production could be converted to paddy. Wherever existing cultivation was deemed effective, the CPK retained it, especially in the Tonle Sap floodplain, where recessional cultivation was the only feasible option. The pursuit of higher yields led the CPK to experiment with improved varieties of seed developed through scientific breeding programmes. In the 1950s and 1960s, the Cambodian government – with the assistance of USAID – implemented two agronomic research stations in Battambang province for the purpose of developing high-yielding strains. At least one of these stations continued to operate under the CPK with the assistance of Chinese agronomic advisers. Three high-yielding varieties of rice – *Pram pi taek*, *Ramuon sar* and *Champas kok* – were distributed by the CPK, at least one of which was an imported breed developed in China (Nesbitt 1997).

Contemporary observers and aid agency reports in the 1970s and 1980s noted that rural producers lost significant numbers of draft animals during the years of conflict. USAID estimated that in 1967 Cambodia had 1.2 million draft animals (Benge 1991). By 1979, that number had decreased by 50 per cent. It is not known how many of these animals were killed or abandoned by farmers fleeing the countryside between 1970 and 75, nor how many were killed, eaten or sold to neighbouring countries during the famine years of 1975–79. However, Party officials noted the lack of cattle and water buffalo for traction as a serious concern, mandating efforts to breed animals and maintain the health of the current stock.[2] .Given the physical requirements of rice cultivation, the loss of so many animals would have placed considerable pressure on production, especially in soils that consistently develop a hardpan – approximately 11 per cent of

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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agricultural land (Nesbitt 1997). With the CPK's rhetorical emphasis on human labour, it is reasonable to assume that additional workers using hand tools compensated for the loss of traction. But planning documents also indicate that the CPK made efforts to acquire tractors and heavy farm equipment from overseas (Party Center of the Communist Party of Kampuchea 1976b, 90).[3]

Finally, and most importantly, increased rice production was critical to the success of the CPK's Four Year Plan, because surplus rice was to form the basis of foreign exchange (Party Center of the Communist Party of Kampuchea 1976c). Critical inputs to agriculture and industry – fertiliser, pesticide, industrial materials, heavy equipment and weapons – were purchased on foreign markets in exchange for rice (Party Center of the Communist Party of Kampuchea 1976a, 20; see also Mertha 2014). The rice sold overseas was the surplus left after the state-mandated ration had been allocated. Increases in agricultural production enabled increases in the quantity of rice available for exchange and provided the necessary injections of capital to spur industrial growth.[4] Motivated to increase foreign exchange, CPK elites established ambitious production quotas to support the goal of tripling rice production. But to maximise the ratio of profit to cost, there were no planned increases to the standard ration (see for example Party Center of the Community Party of Kampuchea 1976b, Tables 11, 14, 17, 20, 23, 26 and 29). As such, despite the rhetoric of the CPK and the STV's claims that the Party was 'pure' communist, the mode of production was a classic model of state *capitalism* and production for exchange (Tyner and Rice 2015).

The rice cities

Following the lead of Swyngedouw and Heynen (2003, 906–7), we work through the sociospatial processes, practices of material metabolism and urban spatial forms that were made necessary by CPK rice production policies and found expression in the reorganisation of Cambodia's cities. Of course, a history of methodological cityism poses challenges for research of this kind. It is difficult to reconstruct Cambodia's urban geography when 'the urban' has been broadly excluded from analysis under the STV. As a totalising framework (see McIntyre 1996), the STV's explanation of urbicide discourages research into the role of cities after the initial putsch. As a result, questions about Cambodian urban history under the CPK are rarely asked or answered.

Socio-spatial practices

Under the CPK, Democratic Kampuchea was governed through a hierarchical system of nested geographic divisions. This form of administration – known as integrated autonomy (Tyner *et al.* 2014) – divided the country's provinces into five zones (*Phumipeak*).[5] Each zone was further organised into regions (*Damban*), districts (*Srok*), subdistricts (*Khum*), cooperatives (*Sahaka*) and villages (*Phum*). Table I shows the hierarchy of administrative units. For selected areas, special 'autonomous' regions were also formed; for example, Kratie, Siem Reap and the port facility at Kampong Som were administered as a separate entities.

Each political unit in the hierarchy was administered by a three-person committee. These governing bodies were responsible for overseeing the implementation of party plans and policies – a mandate that involved delegating tasks to lower administrative levels and passing information to higher levels. Under the CPK's vertical hierarchy, broad decisions about what to plant, where and when had to percolate up from local production groups to higher levels of authority where local socioecological demands were balanced against centrally determined production quotas (for a discussion of this hierarchy with respect to rice production, see Tyner and Rice 2015).

Not only did the vertical hierarchy emphasise centralisation in decision-making, the CPK demanded that rice production from each village and cooperative was aggregated at the level of the district and higher, where decisions about its allocation were made.[6] To meet this requirement, harvested rice had to traverse a distributional network before it was consumed, replanted as seed or sold for export. Mandated centralisation ensured that any rice harvested at the village level would be moved *somewhere*, even if it was ultimately returned to the village to be eaten (as ration) or planted (as seed). By necessity, this distributional network had to cover the country – even if such coverage was intermittent – due to the wide spatial distribution of rice cultivation and the production quotas established for each district and region. By way of illustration, documents indicate that 398 sacks of rice seeds were distributed to the Eastern Zone between 1 and 15 May 1977 and 835 sacks of husked

Table I Integrated autonomy of Democratic Kampuchea

Administrative units (1975)	*Administrative units (by 1977)*
Democratic Kampuchea	Democratic Kampuchea
Zone (*Phumipeak*)	Zone (*Phumipeak*)
Region (*Damban*)	Region (*Damban*)
District (*Srok*)	District (*Srok*)
Subdistrict (*Khum*)	Subdistrict (*Khum*)
Cooperative (*Sahaka*)	High-level cooperative (*Sahaka thank kpors*)
Low-level cooperative (*Sahaka thank teap*)	Cooperative (*Sahaka*)
Village (*Phum*)	Village (*Phum*)

Source: Tyner *et al*. (2014)

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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rice were collected from the Northeast Zone between 1 and 31 December 1976.[7] Anticipating the quantities and timings of delivery for agricultural inputs was an enormous logistical undertaking: numerous CPK documents from this period show production estimates and harvested quantities organised by district and grade of rice.[8]

Also by necessity, this distributional network had to have central nodes of aggregation that provided a logical place for storage, categorisation, milling and allocation. In 1976, North Korea sold the CPK rice milling equipment to be located in Phnom Penh, paid for with rice exports.[9] Ports were needed to provide access to ships carrying exported rice and delivering imported goods. Say Saut, a dockworker in Kampong Som, helped offload goods from Chinese ships. He recalls seeing between five and seven Chinese ships arriving at the port every two weeks. One ship he witnessed offloaded 300 trucks and 10 tanks bound for warehouses in Phnom Penh.[10] Such needs for storage, coordination and security suggest several important roles for the city.

This distribution network not only had to carry rice to and from rice-producing areas, it had to transport agricultural inputs – either acquired through trade or produced within Cambodia – to the field. Fertiliser, seed and pesticides needed to be moved from ports and storage facilities, through the spatial hierarchy of the CPK, to the labour units cultivating the fields. Meanwhile, under the CPK, the demands placed on this input-distribution network dramatically increased. First, with the CPK's insistence on increasing production to three crops per year wherever possible, each hectare under cultivation required more seed stock, fertiliser and pesticides. Second, with the widespread loss of traction animals like cows and water buffalo (Benge 1991; Nesbitt 1997), a primary source of fertiliser was lost. The CPK established work units responsible for collecting night soil (human waste) as supplemental compost, though documentary evidence indicates that chemical fertilisers were also imported, increasing demand for transportation.[11] Finally, with a mandated third crop planted in select areas, insect pests may have become an increasing nuisance.[12] A logical response to this threat would have been increased demand for pesticides. Whether pesticide use did, in fact, increase, remains unknown, although documentary evidence indicates that the CPK sought to produce and acquire pesticides to control agricultural pests and mosquitoes, going so far as to develop an agrichemical laboratory in Chroy Changwar.[13]

There is evidence that the CPK adopted improved varieties of seed from research stations that had been in place during the early 1970s (Nesbitt 1997) and from Chinese agronomists (Party Center of the Communist Party of Kampuchea 1976b). Improved varieties needed to be regularly refreshed with original genomic stock to prevent undesirable crosses with existing genetic lines. The distribution of these improved varieties required centralisation of effort with respect to the scientific development of the stock, the production and storage of seed stock for distribution, the decision where and when to release the stock, and the evaluation of the stock's effectiveness. CPK documents indicate plans to establish seed testing locations in different agricultural zones to ensure ideal environmental adaptation.[14] Imported varieties of improved seed had to traverse the distributional network from port, to storage facility, to field.

Paddy rice cultivation requires a sizeable supply of labour, especially under a shortage of traction animals. This labour not only requires centralised organisation due to the complex timing of tasks (Bray 1994; Hanks 1992; Scott 1976), it requires basic material for survival. Clothing, tools, medicine and amenities – not to mention the rice ration itself – had to be transported to collectives and workers' units by way of the supply network. Makk Sarin, a truck driver, recalls loading tractors, fabric, cigarettes, cement, rice and salt from warehouses in Phnom Penh for transport to rural areas.[15] Paddy rice cultivation had high labour demands during planting and harvesting, with low labour requirements in between. Thus, to maximise the productivity of labour, workers needed to be moved between fields or between productive tasks several times during the year – a requirement that demanded not only coordination and control, but a transportation network of trucks, trains, carts, rails and roads. With additional harvests and the shifting requirements of infrastructural work, the spatial variability of labour demand over the course of each year necessarily increased.[16]

Finally, the infrastructure – railways, terminals, junctions, roads, trains, trucks and repair facilities – to support the various distributional networks required a network of its own to provide tools, parts and fuel (Party Center of the Communist Party of Kampuchea 1976b). This logistics network needed its own system of command and control, a system organised in a way that reflected the transportation network it supported – that is, in those locales where the transportation network was dense, one would expect that the support network was also dense. This accretion of material and social processes is a universal characteristic of urbanism.

Material metabolism

The demands of paddy cultivation, especially irrigation, required new circulations of material into and within spaces of rice production. The tools and equipment required for tilling, winnowing, threshing, milling and bundling rice – if not imported – had to be fabricated within the country. Such light industrial production was

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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not widely distributed. Rather, industrial manufacturing coalesced in spatial proximity to its raw material inputs: sources of iron, steel, aluminium, energy (electrical, thermal, or mechanical) and labour. Cities offered not only the material facilities but also the spatial arrangements of actors necessary to make production practical and efficient.

According to the STV, the CPK was bent on purifying society through agricultural labour: a policy that drove the evacuation of cities and forced millions into the rice fields. To be sure, physical labour was critical to building infrastructure and agricultural capacity. But CPK planning documents indicate that this dependence on physical labour was not intended to be permanent:

> Estimates are that today's labor force numbers five million. These forces have been moved to do various work, and there now remain 4,700,000 people. Use some of them in producing rubber, sugar cane, and there still remain four million. We must work three million hectares of land; if we expand, then four million. So each person must work one hectare. This force is not enough to do it all, and we need the aid of machinery. Starting in 1980 we must have machinery to assist the forces of the people and to replace manpower. Our people are striving and working hard, fifteen hours a day. This is having an impact on the health of our people.[17]

CPK leadership clearly recognised the need to quickly improve productivity through increased technological inputs. To this end, the Party not only purchased tractors and heavy equipment from overseas, but established a tractor factory in Boeng Srayap with the assistance of the North Korean government.[18] This concern with tractor production is characteristic of a general shift towards domestic manufacturing. Indeed, documentary evidence reveals the construction or repurposing of numerous manufacturing facilities, including factories to produce tyres, textiles, lathes, cigarettes, lighters, soap, beverages, generators, boats, rubber materials, fertiliser and petroleum products.[19] One industrial product crucial to rice cultivation was cement. The CPK's plan to spatially and temporally expand cultivation relied on a centrally coordinated, large-scale irrigation scheme. This scheme involved the construction of numerous dams, canals, bridges and water control structures across the country, producing a considerable demand for concrete, rebar and construction equipment. The CPK restarted domestic cement production to support this and other construction projects like roads and airports (cf. Kiernan 2002; Twining 1989). Indeed, one of the first major imports in 1976 was raw material for the construction of a cement factory at Châkrei Ting, with Chinese technicians providing technical assistance during construction and operation.[20] Rice earmarked for export had to be milled and organised into categories based on destination, quality/grade and type. Cataloguing and packaging for transit required labourers, decision-makers, heavy equipment, storage facilities, palettes and palette-makers, and myriad tools needed to perform basic administrative functions – paper, ledgers and typewriters. Administrative spaces had to be established (or re-established) alongside warehouses and transportation facilities to house the people tasked with managing these movements and conversions.[21] In Phnom Penh, embassies and guest houses were maintained to accommodate foreign dignitaries and numerous Chinese advisers (see Mertha 2014).[22] These accoutrements of the sovereign state facilitated the negotiation of trade agreements and the evolution of foreign policy.

Finally, these metabolic processes entailed further forms of metabolism to support their function. Workers needed food and water. Urban infrastructure like streets, sewers and electricity – to the extent that it survived the war – required continuous maintenance. Osborne (2008) notes that during 1975–9, Khmer Rouge soldiers were used as labour to clean streets in Phnom Penh and that as many as 20 000 people reoccupied the city to 'keep the city functioning and [maintain] production in a limited number of factories' (2008, 153). Indeed, the maintenance of the city itself demanded numerous interlocking networks of material and control.

As such, the metabolic processes that reproduced Cambodia's urban spaces were essential for three, critical spatial circulations: (i) the movement and conversion of material from outside Cambodia toward rural areas – for example, the purchase and use of fertiliser from foreign suppliers; (ii) from rural areas to foreign markets – for example, rice; and (iii) from rural areas to rural areas – especially the distribution of the rice ration and the allocation of agricultural inputs. It has been theorised that cities are established around 'economies of agglomeration' – the continuous accretion of social and material relations as waves of specialised industries emerge to support primary forms of production (Goldstein and Gronberg 1984). Such economies are said to be propelled forward by free markets that create opportunities for competition in the provisioning of necessary services. In the case of the CPK, despite an absence of domestic markets, evidence suggests that an economy of agglomeration may have existed on the basis of *material logic*; that is, production attracted more production through the benefits derived from proximity and infrastructural reuse, not competition. As such, the re-emergence of Cambodia's cities was not an epiphenomenon of intersecting markets, but a primary factor of production in a state-level corporation – a corporation directed toward external markets and an ambitious programme of rural transformation and exploitation.

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Spatial form

The gradual repurposing of Cambodia's cities under the CPK now begins to make sense. Within cities, social processes and forms of metabolism followed logical assumptions about efficiency: the placement of storage facilities, factories and administrative centres corresponded with a spatial logic of production (see Tyner *et al.* 2014). In addition, the repurposing of cities can now be understood as a necessary outcome of the CPK's policies. Cities emerge as aggregations of power. As such, they also accrete power. This feature of the urban explains both the CPK's desire to evacuate the cities and repopulate them. Evacuating the cities effectively broke the sociospatial relations between urban dwellers and urban modes of production in April 1975, allowing new relations of production to be established through an expansion of the existing, rice-based economy. It reset the relations of power that existed between people and the material environment on which they depended, forcing Cambodians into new dependencies with new institutions. At the same time, cities had to be rebuilt out of necessity: to manage the organisation, distribution, security and production of the new state. Once we understand the urban system of Democratic Kampuchea as emerging from and within the contours of the dominant mode of production, and acknowledge that this mode of production was effectively retained by the CPK, it makes sense that the city would re-emerge in surprisingly consistent form.

Conclusions

The CPK's emphasis on rice production as the cornerstone of Cambodia's economy ensured the redevelopment of cities as key nodes in a network of production for exchange. The state's need for centralisation of flows was complemented by four factors: (i) the CPK's hierarchical system of integrative autonomy; (ii) a networked irrigation system that required centralised planning and coordination; (iii) a growing need for agricultural inputs that could only be supplied through import or specialised manufacturing; and (iv) the sale of surplus rice to foreign markets. Under this analysis, the Cambodian city is no longer seen as an abandoned husk forcibly depopulated to support a utopian ideology. Rather, the CPK's cities re-emerged as pragmatic necessities to support the life-functions of rural production and consumption.

This pragmatic re-urbanisation was complementary to – and conditional upon – a brutal and well-documented re-ruralisation. Indeed, both the destruction and remaking of Cambodia's cities paralleled the destruction and remaking of the countryside. Years of American military action and civil war had succeeded in decimating rural agriculture. To rebuild it, the CPK needed to break and reset the interconnections between rural and urban space, a task that required a reorganisation of Cambodia's cities. Both of these processes were driven by the CPK's shift to rice production for foreign exchange. In fact, 'the urban' can still be understood as a particular consequence of capitalism: Cambodia's cities were destroyed as symbols of exploitation, only to be restored as instruments in the machinery of state production.

Not only does this analysis run counter to the STV, it highlights a key methodological shortcoming of the urbicide literature. Concepts like 'anti-urban bias', 'forced demodernisation' and 'place annihilation' emerge from a too-narrow focus on urban destruction that discounts the multiscalar and multidimensional processes within which cities are integrated. In the case of Cambodia, there was no bias against urban spaces *per se*: Phnom Penh and other cities were not destroyed *on the basis of being cities*. Rather, the CPK eliminated particular urban social relations even as it sought to build new ones. Which spatial practices, metabolisms and urban forms survived, and which ones were eliminated, depended on events taking place well beyond the boundaries of the city, or even the country.

Finally, in scholarship on the CPK, we find a similar analytical privileging and isolating of the city – methodological cityism – common to case studies in urban political ecology that claim to explore processes of urbanisation (Angelo and Wachsmuth 2015). These studies suffer from a tendency to frame 'the urban' as either a phenomenon in-and-of-itself, or an engine of production propelled forward by the metabolism of 'nature' – invariably a 'nature' extracted from somewhere else. Like a dog chasing its tail, 'the urban' comes to be made by and for urban metabolism, to support and accelerate circulations of material and capital that do productive work within urban space. The re-emergence of Cambodia's urban forms under the CPK challenges these assumptions. Such an analysis can only succeed when urban political ecology is sensitive to the political ecology within which the urban is situated. It suggests that urban political ecology should venture beyond the city limits.[23]

Acknowledgements

Special thanks to Sokvisal Kimsroy and Mandy Munro-Stasiuk for their ongoing support with this case study. In addition, we thank the three anonymous reviewers whose invaluable input helped us realize the broader potential of the original manuscript.

Notes

1 See for example 'Interview with Van Rith in Khpop commune, S'ang district, Kandal province', archived at the Documentation Center of Cambodia, Phnom Penh.

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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2 See 'E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*' archived by the Extraordinary Chambers in the Court of Cambodia (ECCC) at http://www.eccc.gov.kh/en

3 See for example Document No. L0001022, 'Minutes of the Standing Committee's Visit to the Southwest Zone 20-24 August 1975', and Document No. D00683 'Minutes of the Meeting of the Standing Committee 28 February 1976', archived at the Documentation Center of Cambodia, Phnom Penh. The latter document in particular details that the CPK requested over US$5.4 million worth of supplies from Sweden, including 400 diesel engines, 50 rice huskers and 100 tractors.

4 See 'Report of Activities of the Party Center According to the General Political Tasks of 1976' (20 December 1976), in *Pol Pot Plans the Future* 182, 183, supra note 31. This document notes production increases for 1976; however, no specific accounting is provided.

5 After their victory in 1975, the CPK periodically reorganised the zonal structure of Democratic Kampuchea. In 1975, for example, the Southwest Zone was split into two, forming a new West Zone, while in 1977 a new North Zone was created while the old North Zone was renamed the Central Zone.

6 See for example Document Number L0001451, 'Minutes of Divisional and Regiment Secretary-Undersecretary of Logistics Meeting, 19 September 1976', archived at the Documentation Center of Cambodia, Phnom Penh. According to this document, for example, 410 hectares of short-term rice were to be cultivated in Division 502; however, at the time of the meeting, only 475 hectares of rice seedlings had been transplanted because of a lack of seedlings. An additional 1156 hectares of long-term rice were alsorequired to be planted.

7 Document Number D22916 'Materials Given to Zone and Regions from 1 May to 15 May 1977' and Document Number D22760 'Import and Export Items from the Northeast Zone 1–31 December 1976', archived at the Documentation Center of Cambodia, Phnom Penh. In principle it is possible to reconstruct the transfer of seedlings, husked rice and other materials between and within Zones; preliminary analysis indicates, however, that archived records are incomplete and contain numerous inaccuracies.

8 For example, see 'Document E3/1228: Weekly Report from 16 to 22 July 1977', one of many weekly rice reports archived by the Extraordinary Chambers in the Court of Cambodia (ECCC) at http://www.eccc.gov.kh/en.

9 See 'Ministry of Commerce document no. 0292/CK/76', archived at the Documentation Center of Cambodia, Phnom Penh.

10 See 'Interview with Say Saut', archived at the Documentation Center of Cambodia, Phnom Penh.

11 From 'E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*'.

12 Insect pests like the Brown planthopper (*Nilaparvata lugens*) may have taken advantage of continuous cultivation. In much of Southeast Asia, the planthopper is kept in check through the fallowing of fields during the dry season: a practice that starves the larvae of food (Oka 1979). As experienced by several other Southeast Asian countries during the late 1970s, moving to continuous cultivation increased the potential impact of the planthopper.

13 See 'Interview with Chann Diel' and 'Interview with Chhum Seng', archived at the Documentation Center of Cambodia, Phnom Penh. These documents note the CPK's introduction of a pesticide for use on cotton. Also, photographs published in the CPK's magazine *Tuosnavadey Yukveakchun Yukveakneary Pakdewat* (Male and Female Revolutionary Magazine), for example, depict Khmer Rouge youth conducting anti-malarial campaigns through the application of insecticides. See also 'E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*'.

14 From 'E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*'.

15 See 'Interview with Makk Sarin', archived at the Documentation Center of Cambodia, Phnom Penh.

16 See for example Document Number L0001022 'Minutes of the Standing Committee's Visit to the Southwest Zone, 20–24 August 1975'. According to this document, for example, additional labour was requested to be transferred to the North and Northwest Zones, as these areas were considered to be more favourable in terms of rice production.

17 From 'E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*'.

18 See for example 'Interview with Uk Chhum', archived at the Documentation Center of Cambodia, Phnom Penh. Uk Chhum helped start a factory at Boeng Srayap with 200 workers. The interview also mentions the presence of a second factory at Prek Ho.

19 From 'E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*'.

20 See for example 'Interview with Van Rith in Khpop commune, S'ang district, Kandal province'.

21 See for example 'Interview with Van Rith in Khpop commune, S'ang district, Kandal province'. The document mentions the purchase of lathes and Chinese rice milling equipment for 140 million yuan.

22 Multiple documents describe visits from foreign dignitaries and include the accounts of workers associated with the Cuban, Vietnamese, Chinese and Korean embassies. See for example 'E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*'. See also 'Interview with Chhay Moeun, I06702', 'Interview with Say Chouly' and 'Interview with Huy Rin' archived at the Documentation Center of Cambodia, Phnom Penh.

23 A challenge to methodological cityism may have benefits beyond urbicide and urban political ecology. A growing body of work questions conventional, Western-derived, views of rural-to-urban transition (McGee 1991) and explores the emergence of 'intermediate zones' that do

ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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not fit into traditional rural/urban binaries (Lacour and Puissant 2007), particularly in Southeast Asia (cf. Gillen 2016). As this Cambodia example suggests, a sensitivity to socio-spatial processes across city limits may contribute to these debates.

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ISSN 0020-2754 Citation: 2017 doi: 10.1111/tran.12187
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